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Winter Precipitation Type...

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The calendar may say autumn but we know that winter isn't very far away. Not only do we have to worry about snowstorms but freezing rain and sleet are always a concern. The type of precipitation that falls is just as important, or possibly more so, than whether precipitation falls or not; and is often very difficult to forecast in the winter months. The key to the type of precipitation that falls is often not the temperature of the ground but rather the temperature of the air above the ground and how deep a particular layer of cold or warm air is. Allow me to explain...

Snow- This is a pretty easy one to figure out. Snow will occur when the temperature of the air is below freezing from the ground all the way up. The temperature just above ground level may be above freezing, but if this layer of warm air is shallow enough, the snow does not have time to melt before it hits the ground. The temperature of objects on the ground may be above freezing and as such, the snow will melt on contact.

Sleet and freezing rain- All storms are a mixture of cold and warm air. In many parts of the storm (especially near the warm front), warmer, less dense air is flowing up and over the colder, more dense air. The result is often a "warm air sandwich" with a layer of air above freezing located in between two layers of sub-freezing air. The depth of the warm layer is crucial to what type of wintry precipitation will fall. The snow first enters the layer of warmer air and melts. If the layer of cold air near the ground is thick, the rain will refreeze into sleet or ice pellets. Sleet usually bounces when it hits a surface and does not stick to objects, but can accumulate just like snow. If the layer of cold air is shallow, and objects on the ground are less than 32 degrees, the falling rain doesn't turn into ice until it hits these objects. This is freezing rain. These objects can be cars, trees, power lines and roads.